

## **REMARKS**

### **Status of Claims**

Claims 1-21 were pending in the application. Claims 1-21 have now been cancelled solely to expedite prosecution, and new claims 22-42 have been introduced. Support for these newly introduced claims may be found in the claims as originally drafted and in the text of the specification. No new matter has been added by way of these newly introduced claims.

### **Information Disclosure Statement**

Applicants submit herewith an Invention Disclosure Statement ("IDS") containing the references that were cited by the present Examiner in the International Search Report ("ISR") that the present Examiner prepared for the PCT application corresponding to the present application. Applicants also submit in this accompanying IDS the references that were cited in the Supplementary European Search Report for the EP application corresponding to the present application.

### **Rejections**

Any Rejection Of The Claims Under 35 U.S.C. § 102(b) As Anticipated By U.S. Patent No. 5,979,075 To Grenci Et Al. Is Inapposite, And Should Not Be Made.

The Examiner had rejected independent claim 1, and claims 8-10, 14, and 16-19 which depend from this claim, under 35 U.S.C. § 102(b) as anticipated by Grenci et al., U.S. Patent No. 5,979,075 ("Grenci"). As Applicants have previously discussed in the Draft Response Faxed to the Examiner on November 20, 2006, this rejection was inapposite and should have been withdrawn in light of the failure of Grenci to teach every element of these claims, and in particular the 1) pressure-ratio limitation and 2) "substantial alteration" limitation of these claims.

In the present Response, Applicants have cancelled all of the earlier presented claims, and now provide newly presented claims 22-42. As Applicants will show below, as for claims 1, 8-10, 14, and 16-19, newly presented claims 22-42 are not anticipated by Grenici, because Grenici fails to teach every element of these claims. Therefore, any rejection of these newly introduced claims as anticipated by Grenici is inapposite, and should not be applied to these claims.

Newly Presented Claim 22 Is Not Anticipated By Grenici, And This Claim Should Therefore Be Allowed.

Newly presented claim 22 is drawn to a method for killing substantially all of the biological contaminants in a fluid, where this killing is accomplished by passage of the fluid through one or more positive-displacement pumps connected in series and operating at pressure ratios such that killing of biological contaminants in the fluid occurs. Thus this claim explicitly recites the limitation of a pressure-ratio for operation of the pump or pumps sufficient to result in the killing of substantially all of the biological contaminants passing through the pump or pumps.

With regard to this explicit limitation in claim 22 of a pressure ratio sufficient to result in *substantial killing*, absolutely nothing in Grenici teaches or is remotely directed to any killing whatsoever of biological contaminants, and in fact the sole focus of Grenici is the mild heating of a *purified* (i.e., highly contaminant-free) purge gas stream (typically dry nitrogen or some other purified gas) to evaporate water vapor or hydrocarbons from the inner surface of a process vacuum chamber under partial vacuum (see Grenici, column 1, lines 17-21).

Furthermore, not only does Grenici not teach the explicit limitation of claim 22 of the killing of a biological contaminant, or even envision a situation in which there would be biological contaminants to kill, Grenici also explicitly teaches the use of *low* pressure-ratios, since only such modest pressure-ratios are required to evaporate water vapor or hydrocarbons under low pressure, and since higher pressure-ratios would result in

unwanted increased energy costs for pump operation. Thus Grenci explicitly teaches the use of low pressure ratios to provide the marginal amount of heating required for the purpose disclosed in this reference of evaporating, under low pressure, "molecular level contamination" such as water vapor from the internal surfaces of the vacuum system (Grenci, column 3, lines 55-58). And Grenci explicitly states that a low pressure-ratio is highly preferred in order to keep energy costs low, i.e., to obtain high heat generation efficiency (see, e.g., Grenci, column 7, lines 27-34; see also Grenci, column 1, lines 40-42).

Given the total lack of any teaching or suggestion in Grenci either for the killing of any biological contaminant -- much less substantial amounts of biological contaminant -- and further given the explicit teaching of Grenci towards only very modest pressure-ratios and very modest heating, it is clear that Grenci does not teach the explicit limitation of claim 22 of a pressure ratio sufficient to result in substantial killing of the biological contaminants in a fluid passing through one or more positive-displacement pumps. Therefore on this basis it is clear that newly presented claim 22 is not anticipated by Grenci, and that this claim should therefore be allowed.

Newly Presented Claims 23-37 Are Not Anticipated By Grenci, And These  
Claims Should Therefore Be Allowed.

Newly presented claims 23-37 all depend from newly presented claim 22. Therefore, since newly presented claim 22 is not anticipated by Grenci, newly presented claims 23-37 are also not anticipated by Grenci, and, as for newly presented claim 22, newly presented claims 23-37 should also be allowed.

The above argument is sufficient to overcome any argument that Grenci might anticipate newly presented claims 23-37. However, Applicants present the following supplementary reasons for newly presented claims 23-25, 27-30, and 35 why Grenci does not anticipate these newly presented claims:

With regard to newly presented claim 23, this claim recites the explicit limitation that at least one of the one or more positive-displacement pumps connected in series is operated at a pressure ratio exceeding its recommended operating pressure limitations. There is absolutely no teaching or suggestion of such operation in Grenici. Therefore, this newly presented claim is not anticipated by Grenici for this additional reason.

With regard to newly presented claim 24, this claim recites the explicit limitation that at least one of the one or more positive-displacement pumps connected in series is operated at a pressure ratio of at least 2.0. There is absolutely no teaching or suggestion of such operation in Grenici. Therefore, this newly presented claim is not anticipated by Grenici for this additional reason.

With regard to newly presented claim 25, this claim recites the explicit limitation that at least one of the one or more positive-displacement pumps connected in series is operated at a pressure ratio sufficient to raise the temperature of the fluid containing biological contaminants passing through the at least one of the one or more positive-displacement pumps connected in series to at least 200 °C. There is absolutely no teaching or suggestion of such a temperature in Grenici. In fact, under the preferred pump operating conditions described in Grenici in column 6, lines 2-7, a conventionally-operated roots-type blower is operated for a full 5 minutes of recirculation to obtain a temperature of only 200 degrees *Fahrenheit*, i.e., a temperature only about *half* that of the explicit limitation of 200 °C (almost 400 degrees Fahrenheit) of the present invention. Therefore, this newly presented claim is not anticipated by Grenici for this additional reason.

With regard to newly presented claim 27, this claim recites the explicit limitation that at least 99.9% of the biological contaminants in the fluid are killed. As stated above, Grenici neither teaches nor suggests the killing of biological contaminants, and in fact is directed only to the heating of a purge gas, which is typically purified, i.e., relatively sterile. Therefore, this newly presented claim is not anticipated by Grenici for this additional reason.

With regard to newly presented claims 28-30, these claims recite explicit limitations on the kinds of biological contaminants in the fluid, including anthrax spores (newly presented claims 29-30) and smallpox viruses (newly presented claim 30). There is absolutely no teaching or suggestion of such biological contaminants in Grenici. Therefore, these newly presented claims are not anticipated by Grenici for this additional reason.

With regard to newly presented claim 35, this claim recites the explicit limitation of a catalytic converter, which is neither taught nor suggested in Grenici. Therefore, this newly presented claim is not anticipated by Grenici for this additional reason.

For the above reasons, newly presented claims 23-37 are not anticipated by Grenici, and these newly presented claims should be allowed.

Newly Presented Claims 38-41 Are Not Anticipated By Grenici, And These Claims Should Therefore Be Allowed.

With regard to newly presented independent claim 38, this claim is not anticipated by Grenici for the same reasons as for claim 22, namely that Grenici does not teach or suggest killing biological contaminants, and certainly not 99.9% of the biological contaminants. Furthermore, Grenici also does not teach or suggest anything other than a very modest pressure-ratio. Therefore, as for newly presented claim 22, Grenici does not anticipate newly presented claim 38.

Additionally with regard to newly presented claim 38, as discussed above for newly presented claims 29-30, newly presented claim 38 recites the explicit limitation of anthrax spores, which are neither taught nor suggested in Grenici. Therefore, newly presented claim 38 is not anticipated by Grenici for this additional reason.

With regard to newly presented claims 39-41, all these newly presented claims depend from newly presented claim 38. Therefore, since newly presented claim 38 is not anticipated by Grenici, newly presented claims 39-41 are also not anticipated by Grenici, and, as for newly presented claim 38, newly presented claims 39-41 should also be allowed.

Applicants note that additional reasons why newly presented claims 39-41 are not anticipated by Grenici may be found: for newly presented claim 39, by reference to the arguments above regarding newly presented claim 23; for newly presented claim 40, by reference to the arguments above regarding newly presented claim 24; and, for newly presented claim 41, by reference to the arguments above regarding newly presented claim 25.

For all of the reasons given above, newly presented claims 38-41 are not anticipated by Grenici, and these claims should be allowed.

Newly Presented Claim 42 Is Not Anticipated By Grenici, And This Claim Should Therefore Be Allowed.

With regard to newly presented independent claim 42, this claim is not anticipated by Grenici for the same reasons as for claim 22, namely that Grenici does not teach or suggest killing biological contaminants, and certainly not 99.9% of the biological contaminants. Furthermore, Grenici also does not teach or suggest anything other than a very modest pressure-ratio. Therefore, as for newly presented claim 22, Grenici does not anticipate newly presented claim 38.

Additionally with regard to newly presented independent claim 42, this newly presented claim provides the explicit limitation of anthrax spores, which are neither taught nor suggested in Grenici. Therefore, newly presented claim 42 is not anticipated by Grenici for this additional reason.

Further with regard to newly presented independent claim 42, additional evidence that this claim is not anticipated by Greni may be found in the arguments given above for newly presented claims 24 and 40, namely that that there is absolutely no teaching or suggestion in Greni of an operating pressure-ratio of at least 2.0. Therefore, newly presented independent claim 42 is not anticipated by Greni for this additional reason.

For all of the reasons given above, newly presented independent claim 42 is not anticipated by Greni, and this claim should be allowed.

Any Rejection Of The Claims Under 35 U.S.C. § 102(b) As Anticipated By U.S. Patent No. 4,865,749 To Yoshida Is Inapposite, And Should Not Be Made.

The Examiner had rejected independent claim 1, and claims 3 and 6-10 which depend from this claim, under 35 U.S.C. § 102(b) as anticipated by Yoshida, U.S. Patent No. 4,865,749 ("Yoshida"). As Applicants have previously discussed in the Draft Response Faxed to the Examiner on November 20, 2006, this rejection was inapposite and should have been withdrawn in light of the failure of Yoshida to teach every element of these claims, and in particular the 1) pressure-ratio limitation and 2) "substantial alteration" limitation of these claims.

In the present Response, Applicants have cancelled all of the earlier presented claims, and now provide newly presented claims 22-42. As Applicants will show below, as for claims 1, 3, and 6-10, newly presented claims 22-42 are not anticipated by Yoshida, because Yoshida fails to teach every element of these claims. Therefore, any rejection of these newly introduced claims as anticipated by Yoshida is inapposite, and should not be applied to these claims.

Newly Presented Claim 22 Is Not Anticipated By Yoshida, And This Claim Should Therefore Be Allowed.

Newly presented claim 22 is drawn to a method for killing substantially all of the biological contaminants in a fluid, where this killing is accomplished by passage of the

fluid through one or more positive-displacement pumps connected in series and operating at pressure ratios such that killing of biological contaminants in the fluid occurs. Thus this claim explicitly recites the limitation of a pressure-ratio for operation of the pump or pumps sufficient to result in the killing of substantially all of the biological contaminants passing through the pump or pumps.

With regard to this explicit limitation in claim 22 of a pressure ratio sufficient to result in *substantial killing*, absolutely nothing in Yoshida teaches or is remotely directed to any killing whatsoever of biological contaminants involving a positive-displacement pump. Specifically, Yoshida discloses a roots-type pump *solely* for the purpose of moving air from one point to another and not heating or in any way decontaminating that air, functions that Yoshida explicitly discloses as being carried out by other parts of the elaborate apparatus disclosed in this reference.

Thus although the Examiner stated in the Office Action of August 22, 2006, that the roots-type blower of Yoshida operates inherently so as to "alter substantially all of said contaminants passing through said pump (see figure 2; col. 1, lines 10-18; col. 2, lines 33-45; col. 3, lines 10-15; col. 4, lines 45-50)," in fact: 1) figure 2 shows the roots-type pump only as moving air, not heating or pressurizing it; 2) column 1, lines 10-18 do not even discuss the roots-type pump, much less mention the use of such a pump for heating or pressurizing; 3) column 2, lines 33-45 mention a roots-blower, but clearly show other elements of the apparatus as being used for sterilization; 4) column 3, lines 10-15 twice mention a roots-blower, in connection with *air distribution*; and, 5) column 4, lines 45-50 explicitly state that the roots-blower is used to *feed* air, with no mention whatsoever of this blower heating or pressurizing air.

Thus it is clear that nothing in Yoshida teaches or suggests the use of a positive-displacement pump to kill *any* biological contaminants in a fluid, much less substantially all such contaminants, the express limitation in claim 22. As already discussed, the roots-type pump shown in Yoshida is never taught or suggested to have a purpose even *remotely* related to heating or pressurization, and in fact is disclosed solely for the



purpose of *moving* air through the apparatus shown in Yoshida ("[t]he air from the cyclone 3a is *fed to* the air distributor 6 by the Roots-blower 4"; see Yoshida, column 4, lines 45-46, emphasis added). Furthermore, not only is there nothing in Yoshida that shows that the roots-type pump provided there is used to kill biological contaminants, there is no evidence to suggest that the ability to kill *substantially all* biological contaminants – the express limitation of newly presented claim 22 – is inherent to the operation of the roots-type pump shown in Yoshida.

Since Yoshida does not teach or suggest the use of a positive-displacement pump to kill any biological contaminants, nor is there any evidence whatsoever that the operation of the roots-type pump shown in Yoshida will provide the explicit limitation of newly presented claim 22 of killing *substantially all* biological contaminants, newly presented claim 22 is not anticipated by Yoshida, and this newly presented claim should be allowed.

Newly Presented Claims 23-42 Are Not Anticipated By Yoshida, And These Claims Should Therefore Be Allowed.

The limitation of newly presented claim 22 of the killing of substantially all of the biological contaminants in the fluid is present in remaining newly presented claims 23-42 either explicitly (newly presented claims 23-37), or as the limitation of at least 99.9% killing (newly presented claims 27 and 38-42). Therefore, on this basis Yoshida does not anticipate these claims for the same reasons as discussed above for newly presented claim 22.

While the above is, by itself, sufficient reason why Yoshida should not be applied as an anticipating reference to newly presented claims 23-42, Yoshida also should not be applied as an anticipating reference to various of these claims because Yoshida does not teach the additional explicit limitations of these claims. Because the specific arguments in this regard are identical to those presented above with regard to Grenci, the Examiner

is referred to these previous arguments as further support for the non-application of Yoshida as an anticipating reference to these claims.

In light of the above, it is clear that newly presented claims 23-42 are not anticipated by Yoshida, and these newly presented claims should be allowed.

Any Rejection of The Claims Under 35 U.S.C. § 103(a) As Obvious Over U.S. Patent No. 5,979,075 To Grenzi Et Al. Is Inapposite, And Should Not Be Made.

The Examiner had rejected claims 13, 15, and 21 under 35 U.S.C. § 103(a) as unpatentable over Grenzi as applied to claim 1. As Applicants have previously discussed in the Draft Response Faxed to the Examiner on November 20, 2006, this rejection was inapposite and should have been withdrawn because Grenzi fails to the 1) pressure-ratio limitation and 2) "substantial alteration" limitation of these claims, and these deficiencies are so fundamental, and so extreme, that they cannot be supplemented by the skill of the ordinary artisan.

In the present Response, Applicants have cancelled all of the earlier presented claims, and now provide newly presented claims 22-42. As for claims 13, 15, and 21, newly presented claims 22-42 are not rendered obvious by Grenzi combined with the knowledge of the skilled artisan. Grenzi alone does not teach or remotely suggest the substantial killing limitation of the claims or the pressure-ratios required to obtain such substantial killing. Given the obvious failure of Grenzi to teach or suggest substantial killing, it could neither have been obvious *nor possible* for one of ordinary skill to supplement that which was *not present* in Grenzi to obtain any of the newly presented claims.

Moreover, Grenzi cannot be used as the basis for an obviousness rejection for any of the newly presented claims for the simple reason that the modification of the roots-type blower described in Grenzi to accomplish substantial killing of biological contaminants would render that blower unsatisfactory for its intended purpose of

relatively minimal heating with *high efficiency*. Thus Grenci explicitly teaches the use of low pressure ratios to provide the marginal amount of heating required for the purpose disclosed in this reference of evaporating, under low pressure, "molecular level contamination" such as water vapor from the internal surfaces of the vacuum system (Grenci, column 3, lines 55-58), while explicitly stating that a low pressure-ratio is highly preferred in order to keep energy costs low, i.e., to obtain high heat generation efficiency (see, e.g., Grenci, column 7, lines 27-34; see also Grenci, column 1, lines 40-42). Given this situation, it is clear that modification of the pump provided in Grenci to provide substantial killing would violate the prohibition set forth in MPEP § 2143.01V that "the proposed modification cannot render the prior art unsatisfactory for its intended purpose" (citing, e.g., *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

On the basis of the above, none of newly presented claims 22-42 are rendered obvious by Grenci, and these claims should be allowed.

Any Rejection of The Claims Under 35 U.S.C. § 103(a) As Obvious Over U.S. Patent No. 5,979,075 To Grenci Et Al. Or U.S. Patent No. 4,865,749 To Yoshida And Further In View Of U.S. Patent Appl. No. 2004/0002126A1 To Houde Et Al. Is Inapposite, And Should Not Be Made.

The Examiner had rejected claim 20 under 35 U.S.C. § 103(a) as unpatentable over Grenci or Yoshida as applied to claim 1, and further in view of Houde et al., U.S. Patent Appl. No. 2004/0002126A1 ("Houde"). As already discussed, in the present Response, Applicants have cancelled all of the earlier presented claims, and now provide newly presented claims 22-42. As for claim 20, none of newly presented claims 22-42 are rendered obvious by Grenci or Yoshida further in view of Houde. Neither Grenci nor Yoshida teach or remotely suggest the substantial killing limitation of the claims or the pressure-ratios required to obtain such substantial killing. Given the obvious failure of either of these references to teach or suggest substantial killing, it could neither have been obvious *nor possible* for one of ordinary skill to supplement that which was *not present* in these references to obtain any of the newly presented claims.

Moreover, as stated above, Grenici cannot be used as the basis for an obviousness rejection for any of the newly presented claims for the simple reason that the modification of the roots-type blower described in Grenici to accomplish substantial killing of biological contaminants would render that blower unsatisfactory for its intended purpose of relatively minimal heating with *high efficiency*. This observation applies equally to Yoshida, which discloses a roots-type blower for the sole purpose of *moving air*, a function which is clearly inhibited/made unsatisfactory by modification of the blower's pressure-ratio of operation. Thus modification of the pump provided in either Grenici or Yoshida to provide substantial killing would violate the prohibition set forth in MPEP § 2143.01V that "the proposed modification cannot render the prior art unsatisfactory for its intended purpose" (citing, e.g., *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

On the basis of the above, none of newly presented claims 22-42 are rendered obvious by Grenici or Yoshida further in view of Houda, and these claims should be allowed.

**SUMMARY**


In light of the above remarks, Applicants have shown that the newly presented claims 22-42 should not be rejected, and therefore respectfully request that these claims be allowed.

The Commissioner is hereby authorized to charge the 60.00 fee for the one month extension of time, and any other fee that may have been overlooked to Deposit Account No. 10-0223.

Should the Examiner have any questions regarding this Response or this case, the Examiner is invited to call the undersigned at 585-899-2944.

Respectfully submitted,

Dated: 12/21/06

  
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**SUMMARY**

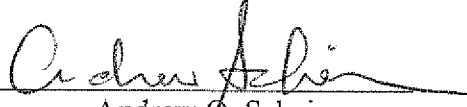
In light of the above remarks, Applicants have shown that the newly presented claims 22-42 should not be rejected, and therefore respectfully request that these claims be allowed.

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